Best Management Practices to Mitigate Toxics and Implement a Greening Program for Small Manufacturing Businesses




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Introduction

Hurricane Sandy, which cut a path 1,100 miles along the Atlantic coast, was the deadliest and most destructive hurricane of the 2012 Atlantic hurricane season and the second-costliest hurricane in United States history. One of the many unfortunate results of this storm was the release of toxic materials from small businesses that were impacted by flooding, storm surge, and high winds. Given the significant impacts this storm and other severe weather events such as Hurricanes Katrina and Irene, had on small businesses, and the likelihood of similar events occurring in the future, sound management of toxics needs to be well understood and implemented to reduce the potential for future releases of toxic materials.

This best management practices (BMPs) guide prepared by the Pollution Prevention and Climate Change (P2C2) Section of EPA Region 2, provides information on minimizing potential public health and environmental impacts posed by chemicals used in small manufacturing business facilities. This material together with energy, water and solid waste management strategies, can help your business save money, enhance your reputation in the eyes of your employees, your customers and the community. Part I of the BMPs provides recommendations focusing on good housekeeping, Part II discusses the benefits of environmentally preferable products and services, reducing energy and water consumption, and implementing a sound waste management program. Part III discusses how to sustain an environmental management program at your business.

Although the BMPs primarily focus on voluntary efforts, related regulatory information is periodically highlighted in the document by the icon pictured on the left. These BMPs are not designed to replace or overrule local, state or federal regulatory requirements applicable to business operations. You must consult with the appropriate regulatory agencies in your area to ensure compliance with all applicable laws and regulations.

Please contact the P2C2 Section at 212-637-3890, if you have questions or suggestions concerning this document.

Part I Good Housekeeping

Good Housekeeping is a safeguard against unexpected and costly environmental problems at your business. Good housekeeping can be organized into five major categories: Procurement, Storage, Handling, Spill Preparedness, and Disposal.

Procurement

- Start by taking a look at your purchasing practices. Establish a procurement schedule. Chart your material use and needs, and the vendors you use. Check your vendors' policies on "buy-back" or returns, material guarantees, and any other amenities they may provide.

- If possible, minimize your toxics material inventory. Many vendors will work with you on the concept of "just in time and just the right amount." This means that they will deliver your raw material more frequently in amounts that match your process needs.

- Do an assessment of alternatives to reduce toxicity; (e.g. water-based, not solvent based.) The Small Business Assistance Program may be able to help you in identifying non-toxic alternatives to some of the chemicals you may presently be using.

- EPA's Design for the Environment program at http://www.epa.gov/dfe/ identifies a number of products that are cost-effective that may be environmentally preferable to some of the products you are currently using in your business.

Proper Storage

- In areas of flood risk, consider storing materials indoors or at a minimum on higher ground.

- Take a close look at the chemicals in your work area every week or so. If you notice any containers in bad condition, get rid of them (using proper disposal methods) or transfer their contents to a new container. Check to see that containers have good caps that are tightly closed and that the chemicals are unable to permeate, erode, or leak.

- Ensure that you are using the proper container type (one that does not react with the toxic material).

- Materials that are incompatible should not be stored together since they may have a violent reaction if accidentally mixed.

- Make sure chemical containers are located in a safe area (i.e., that is, away from the edges of shelves, away from high traffic areas, and out of the way of swinging doors.

- Do not reuse storage containers that previously contained a different toxic material unless you are sure that there will be no chemical reaction.

- Ensure that proper ventilation is in place where toxics are being stored.

- Ensure that toxics that are reactive with others are properly sealed with no possibility of mixing.

- Put containers holding hazardous chemicals or wastes into other containers, trays, or drip pans to catch and contain any chemical that spills or leaks out.

See the references section for further information on safe storage.

Handling

- When you move a chemical container from one place to another, put small containers in a bucket or pail and place larger containers in a tub with hand grips or onto a cart with sides on it that will prevent any spill from flowing off.

- When transferring a chemical from its original container, be sure the new container will safely hold the chemical you are pouring into it: Is it made of a material that won't react with or dissolve in the chemical? Does it have a tight fitting cap? Be careful not to overfill the new container.

- Have proper labels on all containers. When transferring chemicals from the original container to new one, label the new container right away so you won't forget what it is.

- At the end of a shift, be sure your employees tightly close any chemical containers they are using and return them to their designated storage space.

- When deciding on a label for a waste container, be specific. If not, too soon you will have a mixture of wastes that will be hard to classify, unsafe to handle because you don't know what's in it, and more costly to ship out.

When deciding on a label for a waste container, it makes a big difference whether or not it is a "hazardous waste" as defined by regulations. Hazardous wastes have particular requirements, including labeling. You should still label wastes that are not hazardous so you don't get them mixed up with hazardous wastes and because many non-hazardous wastes can still be toxic and can pose hazards to your employees. If you are not sure what labels are required, consult your Small Business Assistance Program contact or Region 2 EPA's Division of Enforcement and Compliance Assistance.

- Material handling activities including storage, loading and unloading, transportation or conveyance, of any raw material, intermediate product, by-product, final product or waste product in the outdoor space of your facility, should be conducted in a storm-resistant shelter. These shelters include completely roofed and walled buildings or structures with only a top cover but no side coverings, provided material under the structure is not otherwise subject to any run-on and subsequent runoff of storm water.

  In general, temporary outdoor sheltering of industrial materials and activities should only occur during facility renovation or construction. Additionally, EPA recommends the following:
  - that a designated individual regularly conduct inspections of containers stored in outdoor storm shelters.
  - Any time external containers are open, deteriorated or leaking, they must immediately be closed, replaced or sheltered.
  - Containers, racks and other transport platforms (e.g.,wooden pallets) used with the drums, barrels, etc., can be stored outside providing they are contaminant-free.

  If you are storing chemicals in above ground storage tanks (ASTs) outside, you must satisfy the following conditions:

- They must be physically separated from and not associated with vehicle maintenance operations.
- There must be no piping, pumps or other equipment leaking contaminants that could contact storm water.
- Wherever feasible, ASTs should be surrounded by some type of physical containment (e.g., an impervious dike, berm or concrete retaining structure) to prevent runoff in the event of a structural failure or leaking transfer valve.

Additional information about material handling is cited in the references section of the BMPs.

Spill Preparedness

- To reduce the chance of spills from damaged containers, have Standard Operating Procedures in place for regular inspections of toxic materials.

- When checking for leaks and bad containers, check the labels too. If any are falling off or fading, write the label information on a fresh sticker and attach it to the container.

- If a spill occurs, know which toxic materials can be neutralized and how to do this, as well as any ways to best isolate toxic materials to reduce the chance of inadvertently mixing two or more toxic materials.

- Have supplies and Personal Protective Equipment (for example, safety goggles, gloves, etc.) for safely cleaning up small spills in each work space in a location that is easy to get to and well marked, and employees are trained on when and how to use them. Further information on proper safety equipment can be found in the references section.

- Locate all the drains on your property, both indoors and outdoors, and determine where they go to. If your building is old, you may be surprised to find that the drain you were sure led to the sanitary sewer and your local wastewater treatment plant actually connects to the storm sewer system that drains directly to a lake or river. After you go to all this trouble, mark your drains accordingly. Consider locating drain covers and spill supplies close by drains so you can quickly close these drains off if there is a spill, if you have time and it is safe to do so.

- If you don't have a Chemical Incident Response Plan, make it a high priority to develop one. This doesn't mean your employees have to know how to clean up a spill by themselves. In fact, they should not clean up chemical spills at all, except for tiny ones, unless they have had extensive training. But, anyone in your business who works with chemicals should know how to keep themselves and their coworkers safe if there is a spill and who to call for help.

- Take some time to ask about the capabilities of your city or county emergency services. Do they have a Hazardous Materials Response Team (often called a HAZMAT team)? If so, do they have the necessary equipment and training to clean up the types of spills that could happen at your business? If you call them in, how much will it cost?

Under the Emergency Planning and Community Right-to-Know Act (EPCRA) there are hazardous chemical storage reporting requirements. For any hazardous chemical used or stored in the workplace, facilities must maintain a material safety data sheet (MSDS). MSDSs, or a list of chemicals, must be submitted to their State Emergency Response Commission (SERC), Local Emergency Planning Committee (LEPC) and local fire department. Facilities must also report an annual inventory of these chemicals by March 1 of each year to their SERC, LEPC and local fire department. Further information about the EPCRA storage reporting requirements is in the references section.

Disposal

No matter how much you improve procurement, storage , handling and spill preparedness, proper disposal of toxics is critical if you are maintaining the use of *any* chemicals on site.

- Empty containers should be marked as such and properly disposed of right away, or at least staged at a labeled bin or shelf, so they don't get confused with products still in use.

- Think about the schedule that is in place for waste removal from your business – are toxic materials sitting in your facility for long periods waiting to be disposed? Track how your business is generating toxic waste and establish the schedule for waste pick-up accordingly.

- Follow appropriate protocols for disposal of each chemical (the protocol should be on the product label; if applicable, make sure to follow any local regulations, in addition to those on the product label).

- Ensure that toxics are disposed separately from everyday non-toxic waste (such as food waste or other landfill trash) so as to not put trash collectors at risk.

- Never pour toxics down drains, flush them town toilets, or dump them outside.

- When disposing of aerosols, ensure containers are completely empty to avoid explosive risk and follow the disposal method found on the aerosol container's label.

- When disposing chemicals, make sure that you are in compliance with federal and state hazardous waste regulations. For further information contact your state's small business assistance program or Region 2 EPA's Division of Enforcement and Compliance Assistance.

Training

Pollution prevention training should become part of your business culture. Everyone from top management to staff should implement practices that improve the overall operation of your facility, protect the environment and build a good neighbor image.

Make sure you have training programs as required by regulations. Develop a list of training topics that make sense for each job, beginning with training required by regulations. Have material safety data sheets (MSDS) accessible for all toxics and ensure that all employees know how to read them. Have a protocol in place to secure toxic materials during an impending extreme weather event. This should include designated person(s) to carry out such protocols – such as a designated Hazardous Materials Team. If you are already doing OSHA Right-to-Know (Hazard Communication Standard) training, which is about how to keep safe when using chemicals, it is a simple thing to add a short segment on how to properly handle and dispose of wastes associated with the use of that chemical. Your State Small Business Assistance Program or Small Business Environmental Ombudsman contact can help.

- If your business is employing non-English speaking employees, training materials and the standard operating procedures should be made available in the language spoken by those employees (In addition to English).

Good housekeeping practices will help ensure that your business will be in compliance with relevant federal and state environmental regulations and have the following important benefits:

- Compliance with regulations can lower the cost of liability insurance, because insurance companies will have less concern about the future costs of a clean-up or the risk of harm to the health of your employees and community.

- Before loaning money, banks usually require buyers to pay for a professional review of previous property uses to see if the property may have been contaminated in some way. Because of this, if you ever need to change locations or use your property for collateral, it will become important to demonstrate that your activities have not caused contamination.

Keep records of your efforts and successes. Good records tell you at a glance what's going on and what needs to be done on a regular basis (like annual training or weekly inspections). They also put you in a better position to pass a regulatory inspection. Most inspectors start with a close look at your environmental records. It pays to be clear on what files you must have to be in compliance and get them organized first. After that, you can decide what information has additional value to you. Some records are essential to protect you from legal and financial troubles down the road. Others can give you valuable data on business performance, or come in handy when you want to show your customers and neighbors that your business is "green." Be sure to go back and look at the records and documents that you are required to maintain by the particular regulations that apply to your business to make sure nothing is missing. Consult your state's Small Business Assistance Program or Small Business Environmental Ombudsman if you are not sure.

If you do get inspected—even just once—it will pay to be prepared. The inspector will usually look at records first and then ask for a tour of your operations. Environmental regulations warrant record keeping associated with spill response, training, waste management, air management, wastewater management and storm water management. Responsible parties who fail to take notice of, or severely disregard environmental regulations may be criminally prosecuted and may even serve jail time.

When your business is fined for environmental violations or has an accidental spill it often ends up as front page news – not the kind of publicity a business benefits from. Not only can an undesirable image hurt sales in your local market, it can also hinder expansion activities you may be planning.

Part ll Saving Money through Sound Environmental Management

There are opportunities to make your business more profitable and productive as well as more environmentally friendly

Green Procurement

EPA has developed the Greener Products Portal to assist you in identifying a variety of products that you may wish to use in your small business. If you are looking to replace existing appliances, office products/supplies, electronics, cleaning products and other items, consult the Greener Products Portal at http://www.epa.gov/greenerproducts/ for cost-competitive goods that pose less impact to the environment.

Saving energy

Saving energy in your business translates into cost savings. Using less electricity means less coal and less natural gas are burned, which reduces greenhouse gas emissions and other forms of air pollution and conserves resources for future generations. Thirdly, there is free assistance available to help your business explore even some of the more involved options so why not take advantage of it? Below are some practices you can implement to lower your energy use.

- Turn off lights or office equipment at night and on weekends or take advantage of natural daylight for lighting needs.
- Disconnect unnecessary equipment completely.
- Turn up or turn back the thermostat during unoccupied times or consider buying a programmable thermostat.
- Caulk and weather-strip windows and doors.
- Install blinds or shades to keep out summer sun to lower air-conditioning costs.
- Purchase fans to keep warm air from accumulating at the ceiling during winter.
- Insulate hot water holding tanks and hot and cold pipes and improve insulation of the climate controlled portions of your facility.

Replace light bulbs with more efficient ones. Some of the more efficient bulbs meet the definition of hazardous waste when disposed of and they need to be managed accordingly. For example, breakage of lamps could emit some toxic substances such as mercury. See EPA's website on universal waste lamps at: www.epa.gov/solidwaste/hazard/wastetypes/universal/lamps/index.htm

- Place your lights on motion detectors or install timers on lights and electric equipment to keep them on only when in use.

- It may be worthwhile to replace lighting fixtures instead of just the bulbs. The new fixtures can allow you to utilize a smaller bulb and get the same amount of light, or reuse the ballast portion of the light

- Call your local utility company to see if they still have a program to evaluate your building for energy efficiency. If the service is available, the utility will provide you with specific options for making your business more energy efficient, usually for free. If your local utility company does not provide this service, check with your state's energy program to see if they do, or know who does.

- Consider participating in the ENERGY STAR program which offers useful guidance to small businesses at : http://www.energystar.gov/buildings/facility-owners-and-managers/small-biz?c=small_business.sb_index

Saving Water

Most business activities are using part of a limited supply of water that is good enough to drink! Only a tiny fraction of the planet's water is drinkable. Ninety-seven percent is sea water, which is expensive and difficult to desalinate. About two percent is caught in polar ice caps. That leaves just one percent to sustain life. Your business pays for using this resource. This may not seem like a large part of your overhead. That is, until you realize that you pay for it twice: coming to the tap and going to the sewer. Take a look at your combined water-sewer bill.

Industrial process water that normally goes to a publically owned treatment works (POTW) facility might in times of severe storms bypass the facility and go directly into the local waterway.
If you have the holding capacity and a heavy storm is approaching, you might consider holding your process wastewater for discharge to the POTW a few days after the storm.

If you want to save some money while reducing the impact of your business on your community's water supply, consider some of the water conservation ideas below.

- Keeping your plumbing fixtures in good working order or upgrading fixtures can save both water and money.

- Test for leaks in the toilet- put food dye in the toilet tank and let it sit for an hour or two without flushing. If you see dye in the toilet bowl, you have a leak. Also, check to make sure the overflow tube is not flowing continually.

- Consider an inspection program for leaks.

- Repair dripping faucets by replacing washers.

- It may be worthwhile to replace plumbing fixtures with more water efficient options.

- Faucet aerators with flow restrictors are available to reduce water use.

- Some heating and cooling equipment models reuse or recycle water.

- Automatic shut offs on water supplies such as sinks and hose nozzles will keep them from being left on.

- High pressure/low volume cleaning nozzles on spray washers also use less water.

- Cover liquid holding areas when not in use to reduce evaporation.

See the reference section for additional information on water conservation and efficiency best management practices.

Reducing Waste Management costs

In addition to energy and water use, waste disposal can drive up your costs. Here are some tips for reducing your waste costs.

- If you hire a hazardous waste contractor, ask them to help you find ways to cut down on costs. While it might seem that it is not in your contractor's best interest to do this, the hazardous waste market has gotten so competitive that contractors are looking for ways to add value to their service and set themselves apart from the competition.

- Look for ways to reduce the amount of wastes your business creates. A simple example is to reuse corrugated boxes two or three times before you send them off for recycling. Since new boxes are expensive, savings can add up fast.

- Consider any reuse opportunities for chemicals. Another option for reuse is to provide it to someone else who may use it such as a school or other business.

Part lll Keeping Your Environmental Program Alive

Environmental efforts within your company will be more successful if employees are directly involved. Employees are a great source of knowledge on environmental issues related to their work areas and the effectiveness of current procedures. Consider setting up an Environmental Management Team and making a company environmental policy. The team should include representatives from throughout the

company. For example, at a small company, a team could include supervisors from each process line as well as people responsible for human resources, sales, and plant operations.

The first task is to write a company environmental policy. The policy should reflect your commitment to the environmental program. It should be short, to the point, and well communicated throughout the company so that employees understand and remember the policy.

Ways to Keep Employees Involved

- Post the Environmental Policy at prominent locations throughout your business.
- Set up a suggestion box for environmental improvements. Recognize or give awards to employees that make suggestions that get incorporated into environmental management procedures.
- Inform employees through a company newsletter or bulletin board and provide them updates on the company's progress in fulfilling its Environmental Policy.
- Once you have a policy established, you can build on it. Whenever the environmental policy changes, enlist the Environmental Management Team to communicate the changes. Employees want to know why it is important to accomplish a particular environmental task and what part they are to play in achieving selected goals.

Communicating your environmental efforts to those outside your business

The opinions of your neighbors and the community around you can be important to the success of your business.

- You may post a copy of your environmental policy so that it is visible to anyone who visits your business.
- If your business has a website, you may wish to post some of the environmental results that you have achieved under your environmental management program.
- Information about your company's positive environmental achievements can be added to the product packaging.
- You may also communicate with your suppliers and vendors that you favor materials and services that result in improved environmental performance.

You may contact the following offices to get more information about environmental regulations relating to chemical management

- If you have questions concerning pollution prevention practices, contact the Region 2 EPA Pollution Prevention and Climate Change Section: 212-637-3755 or 212-637-3764.

- For questions regarding compliance with federal environmental regulations, contact Region 2 EPA's Division of Enforcement and Compliance Assistance at 212- 637-3565.

- If you have questions concerning state environmental regulations contact:

    - The New Jersey Department of Environmental Protection Small Business Assistance Program at: 609-777-0518

    - NY State Small Business Environmental Ombudsman at: 877- 247-2329.

    - New York State Department of Environmental Conservation Division of Environmental Permits, Pollution Prevention Unit at: 518-408-0213

Major References

1. Practical Guide to Environmental Management for Small Business EPA Publication 233-K-02-001, September 2002. This guidance will help you design a management plan that addresses all of the environmental concerns of your business. The Guide will also help you save money and make your business look good in the eyes of your customers and your community. Go to: http://www.smallbiz-enviroweb.org/Resources/smallbizfiles/EM_Guide0902.pdf

2. Building an Environmental Management System: H-R Industries' Experience creating an environmental management system (EMS) might seem like an overwhelming task, especially for a small or medium-sized company, but many of the elements needed for an EMS may already be in place at your facility. Such elements as your procedures to track environmental compliance or your state-required pollution prevention plans can be used directly to give you a significant head start for developing your EMS. Learn more at: http://www.epa.gov/dfe/pubs/pwb/case_stu/case8/

3. This guide is designed to explain environmental management system (EMS) concepts and to support and facilitate the development of EMS among small and medium-sized organizations: https://www.fedcenter.gov/Documents/index.cfm?id=598

Other References

4. The Zero Waste Network has developed a database that includes 518 success stories. Each case study is an example of how a real facility saved money, reduced waste, and/or lowered their regulatory burden through an innovative P2 practice. Go to: http://www.zerowastenetwork.org/success/index.cfm

5. Lean manufacturing is a business model and collection of tactical methods that emphasize eliminating non-value added activities (waste) while delivering quality products on time at least cost with greater efficiency. This website provides case studies, fact sheets and tools containing techniques for integrating environmental considerations into Lean initiatives and methods. Go to: http://www.epa.gov/lean/environment/

6. Green Chemistry is the design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances. Go to: http://www2.epa.gov/green-chemistry

7. Green Engineering is the design, commercialization and use of processes and products that are feasible and economical while reducing the generation of pollution at the source and minimizing the risk to human health and the environment. Go to: hhttp://www.epa.gov/opptintr/greenengineering/

8. Many organizations have found that implementing lean concepts and tools results in improvements in environmental performance, even when lean activities were not initiated for environmental reasons. This site has examples of the types of environmental benefits that result from lean implementation. Go to: http://www.epa.gov/lean/environment/studies/index.htm

9. Mold and Asbestos- The New Jersey Department of Health has compiled some useful Sandy Recovery Resources that include guidance on dealing with mold/asbestos. Go to: http://www.state.nj.us/health/er/hurricane_recovery_resources.shtml

10. EPA's Mold homepage has on-line training courses, http://www.epa.gov/mold/

Handling

11. Guidance Manual for Conditional Exclusion from Storm Water Permitting Based On "No Exposure" of Industrial Activities to Storm Water, EPA 833-B-00-001, June 2000 http://www.epa.gov/npdes/pubs/noxguide.pdf

12. Developing your Stormwater Pollution Prevention Plan, a Guide for Industrial Operators, EPA 833-B-09-002, February 2009 Go to: http://www.epa.gov/npdes/pubs/industrial_swppp_guide.pdf

13. For Safe storage of materials go to: http://www.trainex.org/osc2012/uploads/541/incompatiblematerials.pdf

14. A good hazardous waste resource for small businesses is "Managing your Hazardous Waste – A guide for small businesses" which can be downloaded at: http://www.epa.gov/osw/hazard/generation/sqg/handbook/k01005.pdf

Spill Preparedness

15. For information about Emergency Planning and Community Right-to-Know Act (EPCRA) Hazardous Chemical Storage Reporting Requirements Go to: http://www2.epa.gov/epcra-tier-i-and-tier-ii-reporting/epcra-sections-311-312

16. Proper Safety equipment for cleanup Go to: https://www.osha.gov/SLTC/personalprotectiveequipment/

Compliance with the Regulations

17. Region 2 EPA Enforcement Web page: http://www2.epa.gov/enforcement

18. Small Business environmental home page go to: http://www.smallbiz-enviroweb.org/default.aspx

19. EPA's emergency management activities and regulations help protect the environment and human health from releases or discharges of oil, chemicals and other hazardous substances. This website has information on chemical accident prevention, chemical reporting and oil spills and hazardous substance releases . Go to: http://www2.epa.gov/regulatory-information-topic/emergencies

20. Additional information concerning EPA regulations to help prevent, prepare for, and respond to environmental emergencies, including chemical releases and oil spills can be found at: http://www.epa.gov/osweroe1/content/small_business.htm

21. A summary of requirements for each class of hazardous waste generator: Conditionally Exempt Small Quantity Generators (CESQGs), Small Quantity Generators (SQGs), and Large Quantity Generators (LQGs) can be found at: http://www.epa.gov/osw/hazard/generation/summary.htm

Saving Water

22. For information about water-efficiency best management practices Go to: http://www.epa.gov/watersense/commercial/bmps.html

23. The Alliance for Water Efficiency has information about water efficient products and programs, and provides information and assistance on water conservation efforts Go to: http://www.allianceforwaterefficiency.org/about/default.aspx

Reducing Waste

24. The Reuse Marketplace is a free regional network to find, sell, trade, or give away reusable and surplus items that would otherwise be disposed as trash see: http://www.reusemarketplace.org/